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ABSTRACT

The growing interrelatedness of life on Earth has increased the need for citizens to possess the knowledge and sensitivity required to comprehend the global dimensions of political, economic and cultural phenomena. Global education, a component of environmental education, can be incorporated into social studies in order to link concerns for humans with concerns for the natural environment. Accordingly, this paper presents a rationale for global education, a discussion of infusing global education into the K-12 social studies curriculum, and examples of relevant learning activities. Appended are lists of teaching resources. (Author/WB)

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INFUSING GLOBAL AWARENESS COMPONENTS OF ENVIRONMENTAL EDUCATION PROGRAMS INTO THE KINDERGARTEN - GRADE TWELVE SOCIAL STUDIES CURRICULUM FOR PURPOSES OF AFFECTING STUDENT ATTITUDES AND PERSPECTIVES

Dr. Richard Peters

AUGUST 1981

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ABOUT THE AUTHOR

Richard Peters received his Bachelor of Science in Education (Social Studies) and Master of Education degrees from The University of Maine (Orono); pursued doctoral studies in Social Studies Education at The Florida State University (Tallahassee); and was granted the Doctor of Education degree in Curriculum (with specialization in the Social Studies) from The University of Rochester (NY).

Dr. Peters has been involved in the environmental education movement since 1968. While curriculum researcher for an ESEA Title III project; Operation EPIC (Portland, Maine), Dr. Peters was responsible for the development/delivery/evaluation of a community studies program using community resources (both people and places) in the student environmental awareness process. In 1970, Dr. Peters developed (along with the Science Department) and taught a science/social studies oriented, eleventh grade elective course, Man and His Environment, at Oxford Hills High School, Maine School Administrative District #.7. From July 1973 through July 1978 Dr. Peters was involved in the development/delivery/evaluation of a K-12 environmental education program; Student Environmental Awareness (SEA). This project was funded by the National Institute of Education, Washington, DC. In 1978, Dr. Peters created and taught People In Their Environments (grades 11-12) at Timberlane Regional High School (NH) while serving as Social Studies Department Chairperson. PIE's emphasis was in the areas of conservation, energy, global studies, and stewardship.

Dr. Peters has been published in the field of environmental education by Environmental Education Report, Resources In Education, Social Education, The Educational Forum, and The Journal of Geography. In 1976, the National Council for the Social Studies (NCSS) published "How To Teach About Human Beings and Their Environment" as part of the NCSS How To Do It Series. Dr. Peters has created an environmental education classroom simulation published by STEM, INC. (Provo, Utah), and developed a study of social environments for the Environmental Education Guide Series of the Institute for Environmental Education (Cleveland, Ohio).

STATEMENT

Our's is a history of isolationism; a national attempt to ignore the affairs of the world while concentrating on domestic growth and foreign affairs affecting the Western Hemisphere (1796 - 1865). Isolationists claimed that, except for World War I, the United States had successfully pursued a policy of isolation since the days of George Washington. In 1919 they demanded a 'return to normalcy' by strict adherence to this traditional policy. They argued that America could have peace only by shutting herself off from the rest of the world. Isolationist sentiment was powerful during the 1920's as well as during the depression years, when Americans concentrated upon domestic problems. In the 1920's Congress passed a series of immigration laws reversing our 'open house' policy. Congress thus expressed American sentiment for fewer world contacts. The United States also refused to join the League of Nations and the World Court.

Circumstances have changed over the years, and today we live in a global society -- like it or not! No longer can we, as individuals or as a nation, choose to ignore the rest of the world and its people.

In 1981, the National Council for the Social Studies (NCSS) stated that human life has been globalized to the point where we (the people and the government of the United States) must alter the way(s) we have commonly viewed ourselves and others . Technological advances, increased trade, tourism and cultural exchanges, competition for markets and scarce resources, and the continuing arms race have drawn

nations and peoples into increasingly complex interrelationships.

Thus, we must begin to perceive our individual and national ties with the rest of the world. In short, we must expand our conceptual and perceptual horizons to include an understanding of the world -- and our relationship(s) to it.

In order to develop this global perspective we must, first, understand ourselves and our nation; its past and present as it has effect upon our future. This is the challenge to and role of the social studies in the education of our youths. To become a more effective agent of citizenship education in the global age[1], the schools in general and the social studies in particular need to continue to expand efforts to globalize the curriculum.

WHAT IS GLOBAL EDUCATION?

A well planned strategy to cultivate in young people a perspective of the world which emphasizes the interconnections among cultures, species, and the planet. Global education is an effort to nurture understanding(s) and an appreciation of the whole of humankind as one within the conceptual framework of students.

WHY DO WE NEED GLOBAL EDUCATION?

The growing interrelatedness of life on Earth has increased the need for citizens to possess the knowledge and sensitivity required to comprehend the global dimensions of political, economic,

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[1] Reference to the NCSS policy statement on global education (1981).

and cultural phenomena.

As human beings have developed highly technical societies, they have devised tools and techniques by which they can alter natural ecosystems, change the course of rivers, and clear and reclaim the land. The destruction of certain elements comprising this interdependent ecosystem has an effect on the remaining organic components, and this effect is frequently negative.[2]

The purpose of global education in the social studies curriculum is to develop in students the knowledge, skills, and attitudes needed to live effectively in a world possessing limited natural resources and characterized by ethnic diversity, cultural pluralism, and increasing interdependence.

WHAT IS OUR FUTURE ON EARTH?

According to The Global 2000 Report to the President (1980), if present trends continue, the world in 2000 will be more crowded, more polluted, less stable ecologically, and more vulnerable to disruption than the world we live in now.

We must begin to realize that human beings are but one creation in the totality of nature. Humans belong to a community of living things in which each and every form of life is constantly dependent upon other forms of life for daily existence.

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[2] Reference to "How To Teach About Human Beings and Their Environment," How To Do It Series, National Council for the Social Studies, Washington, DC (1976), Dr. Richard Peters.

WHAT CAN BE DONE, NOW?

The Leadership Conference On Population, Resources, and Environment (Washington, DC 1981) called upon concerned citizens to stimulate in both formal and informal educational systems global concerns for population, resources, and environment, and promote the development of the foresight capability to deal with these concerns. The National Wildlife Federation aims to inform citizens concerning the wise management of natural resources and the importance of a clean environment for humans and other inhabitants of Earth.

The World Future Society's objectives include to advance responsible and serious investigations of the future, and to facilitate communications and cooperation among organizations and individuals interested in studying or planning for the future. Resources for the Future is a non-profit, tax-exempt corporation dedicated to the advancement of research and education in the development, conservation, and use of natural resources.

Recently, the United Nations Environment Program commissioned a study prepared by the International Union for Conservation of Nature and Natural Resources (IUCN) and the World Wildlife Fund. This study, known as the World Conservation Strategy, addresses the problem of how to conserve the Earth's renewable resources despite the worldwide press for economic development. The Strategy recommends that policy at the government level be directed to

conservation performance. Education on all levels is essential to show how conservation contributes to the assurance that the Earth will be able to sustain the growing demands put upon it - both today and tomorrow.

BACKGROUND

To survive on the Earth, human beings require the stable, continuing existence of a suitable environment. The global ecosystem is a connected whole, in which nothing can be gained or lost and which is not subject to over-all improvement, anything extracted from it by human effort must be replaced. Payment of this price cannot be avoided, it can only be delayed.[3]

In their incessant haste to mold the physical structure of the Earth, humans have repeatedly violated the sanctity of nature. Geographical forms and characteristics have been altered and remolded, the air and water we consume have been polluted, essential organic elements in the chain-of-life have been destroyed, and the natural riches of the land have been greatly depleted.

Each year there is a net addition of 75 million people to the world's population, further complicating already acute problems of poverty, food shortages, natural resource depletion, environmental degradation, poor health, urban congestion, and political as well as economic instability. Rapid population growth, worldwide, is a major factor contributing to resource and energy

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[3] Reference to Barry Commoner in The Closing Circle, Bantam Books, New York (1974).

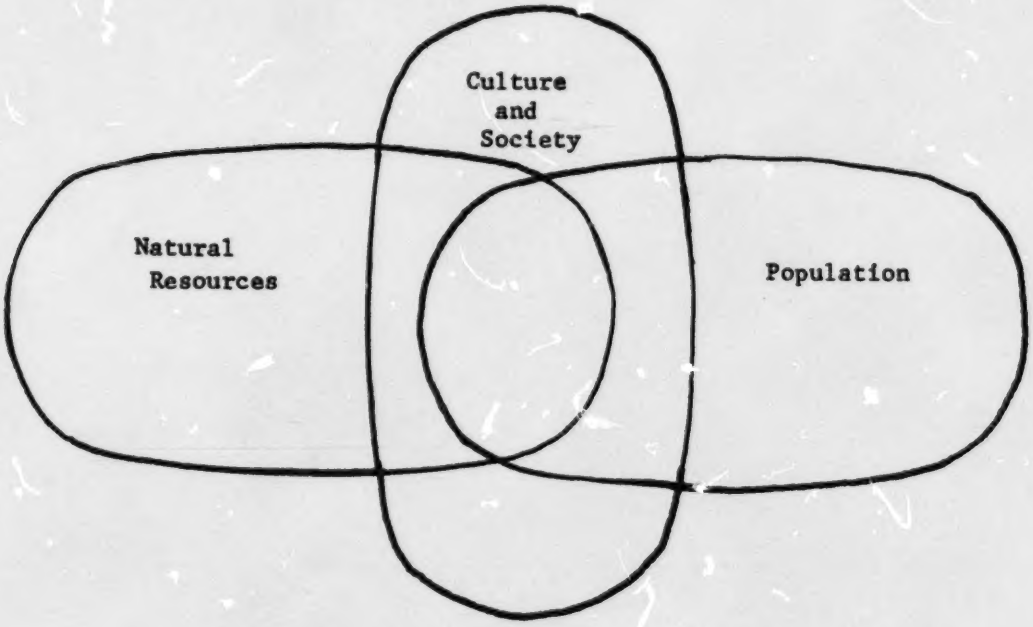
shortages and to environmental damage which may become irreversible by the year 2000, unless current policies and programs change. At present and projected growth rates, the world's population will reach 10 billion by 2030 and approximately 30 billion by the end of the twenty-first century. These levels correspond closely to estimates by the United States National Academy of Sciences of the maximum carrying capacity of the entire Earth.

The term 'quality of life' means different things to different people. For most humans, quality of life means a measure of the extent to which each individual has achieved personal goals. There may well be a conflict between what people want for their own quality of life and what they want for the quality of life of their nation or the world community. Thus, the goal of the international conservation movement is the rational use of the environment, by some, to achieve the highest quality of life for all people. Earth's resources are generally finite, and humans must begin to realize their responsibility to skillfully manage the quantities of resources used, and to protect the quality of remaining resources such as the air and water.

ENVIRONMENTAL EDUCATION AND THE SOCIAL STUDIES

Environmental education may be defined as the process whereby students are directly and vicariously exposed to and interact with natural and social life-space phenomena which directly and indirectly affect and influence their daily lives as members of an ecological

community. As defined by this author, environmental education is comprised of three interrelated concepts: culture and society, natural resources, and population.



Environmental education programs (K-12) should strive to develop and affect the individual's attitudes about and concern for the state of the total environment; that which encompasses both natural and social (human-made) settings. The social studies should seek to affect student awareness and understanding of the interrelationships and interdependence existent among the cultures and peoples of Earth. Together, environmental education and the social studies should be fused into an organized/planned effort to affect human attitudes and behavior regarding relationships among/between peoples of the Earth and their dependence upon nature for

continued survival and the improvement of our species' quality of life.

ENTER GLOBAL EDUCATION. Global education is an inherent component of the environmental education movement, and it can easily be incorporated into the social studies as a well-planned effort to achieve linkage between concerns for humans and for the plight of nature.

The National Council for the Social Studies (1981) identified five concerns which social studies curricula should address themselves to -- in order to become a more effective agent of global citizenship. According to NCSS, the social studies should emphasize:

a) ... that the human experience is an increasingly globalized phenomenon in which people are constantly being influenced by transnational. cross-cultural, multi-cultural, multi-ethnic interactions.

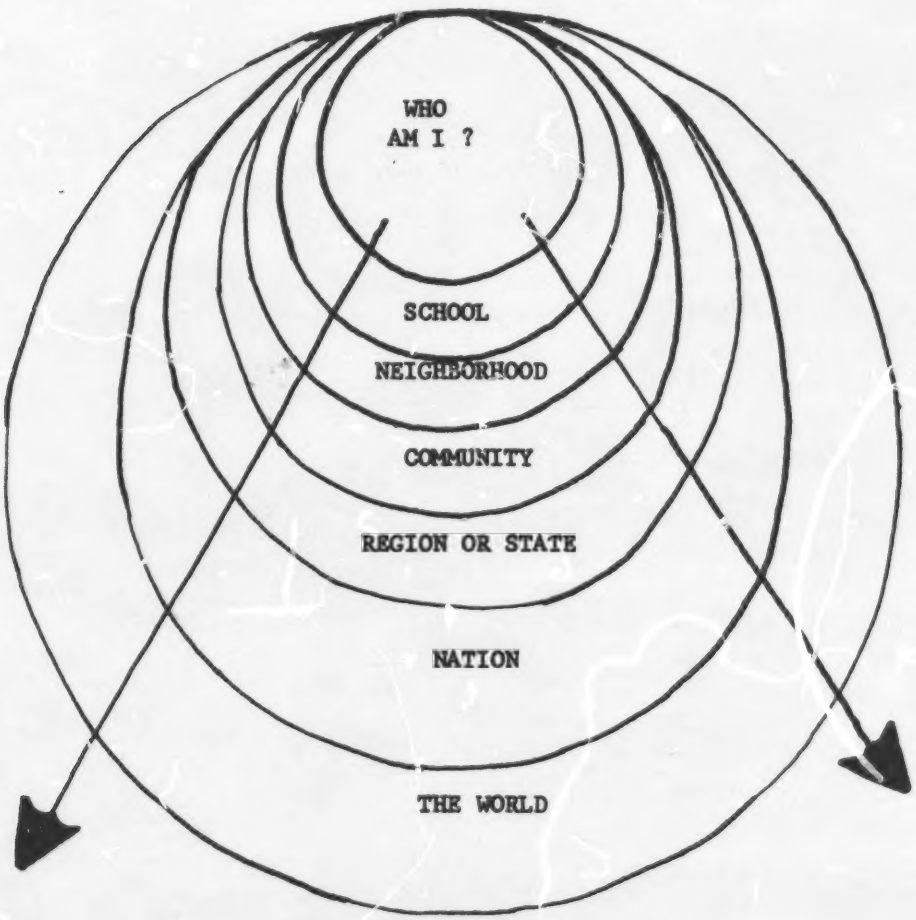
b) ... the variety of actors (individuals, groups, and organizations) on the world stage.

c) ... that humankind is an integral part of the world environment.

d) ... the linkages between present social, political, and ecological realities and alternative futures.

e) ... citizen participation in world affairs.

Writing in "How To Teach About Human Beings and Their Environment" (1976) this author made reference to an 'expanding horizons approach' to environmental education in America's public schools. The intent and purpose of this 'approach' is to develop student awareness about and perceptions of the inter-relationships between the Who Am I? and The World in which the individual lives and matures -- thus becoming a productive member of the global social order.



According to Dr. Rene Dubos (1978) human beings can intervene into nature and transform it (in a positive way) provided they do it with ecological wisdom. The basis for Dr. Dubos' theory for resilience of ecosystems is his personal belief that "anywhere in the world an ecosystem that has been damaged can be brought back to a good condition if (humans) help nature to function with the natural repair systems that exist".[4]

A review of the program for the Twelfth Annual Northeast Regional Conference on the Social Studies (March 1981) indicates the present emphasis being placed on global education infusion into social studies curricula. Entitled The World Is Our Classroom, the thrust of the conference was to assist teachers in opening classroom doors to bring in the world. "Using community resources can provide a wide variety of experiences and knowledge in such areas as citizen roles, human relations, interpersonal/intercultural survival, energy issues, politics, and global interdependence."[5] Some of the presentations pertained to:

- The World Is A Marketplace
- Population Education: Bringing The Real World Into The Classroom
- Teaching Decision-Making Skills Through Ethnic Studies

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4 Dr. Rene Dubos in EPA Journal Reprint, United States Environmental Protection Agency, Washington, DC (October 1978).

5 The World In Our Classroom. Twelfth Annual Northeast Regional Conference on the Social Studies, Boston (March 1981).

. Global Education In An Essential Curriculum

. Resources For Global Education

HOW TO TEACH GLOBAL EDUCATION AS PART OF THE SOCIAL STUDIES CURRICULUM (K - 12)

Global education can be structured in a variety of ways:

. Separate, special units-of-study that are strategically placed throughout a course-of-study for purposes of enriching the course offering.

. An integral part of the total course-of-study; a theme that pervades each and every segment of a specified course.

. Regional studies; geographic areas provide the nucleus for the study of environments and related problems.

In addition to normal classroom activities and resources such as books, films, games, and case studies, direct experiences are very important to the development of global perspectives. Examples of such experiences include:

. Field Trips: the process of exposing students to and allowing them to interact with natural and human-made community facilities and resources.

. Graphic Studies: students conduct environmental studies utilizing still cameras, slide cameras, Super 8 and/or 16mm motion picture cameras, video tape equipment, and/or cassette recorders to collect data and develop study reports.

. Audiovisual Materials: the use of audiovisual materials to expose students to people and places beyond the region of the school or nation.

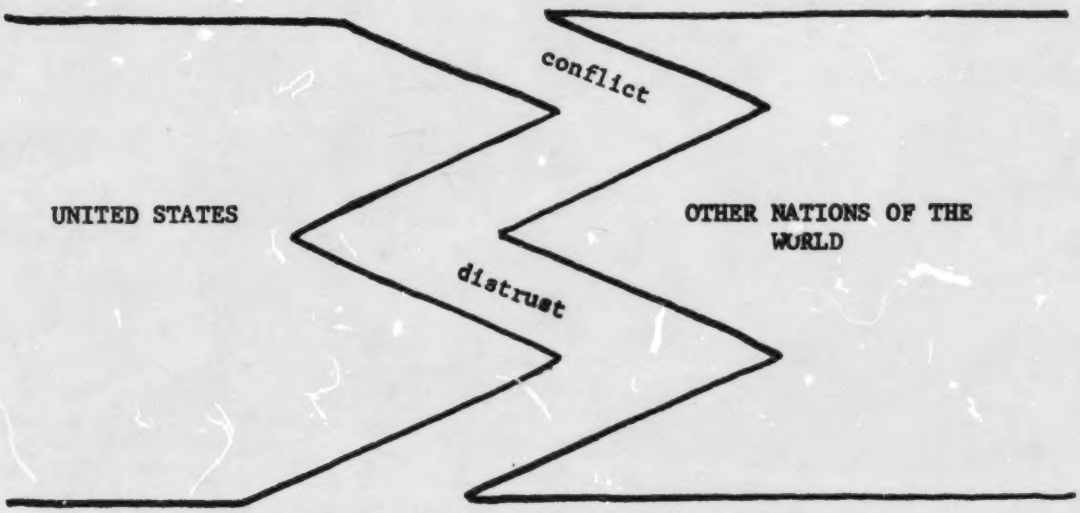
. Geographic Studies: students are involved in the study of the characteristics of map types. They learn how to read map scales and symbols as well as work with compasses. Students use mapping techniques in the field to describe selected geographical areas. These skills can be applied to the study of other nations.

. Vocabulary Studies: student exposure to and use of selected vocabulary words. This skill is applied to the development of reports. (See Appendix IV)

. Concepts Development: selected concepts are introduced, discussed, and used in global study activities. Selected concepts include;

a) The Earth is composed of a galaxy of nations and their peoples. While each nation is characterized by a unique culture, all humans have basic needs and wants which must be met (satisfied)by their respective societies.

b) Totality: The United States is not an island unto itself. Rather, it is a member of a community of nations and is dependent upon the rest of the Earth's inhabitants for its existence and the maintenance of its quality of life.
Only by cooperating with the world can the United States help to create a unified/united effort to preserve life (of all kinds) on Earth.



(Without cooperation and mutual respect, the nations of the Earth are unable to unify in efforts to preserve life and improve standards-of-living for all people.)

In order to instruct students in global education there is a need for the classroom teacher to assess the worth of diverse materials and techniques. The concept of cellular learning is applicable in this situation. As discussed in the Application of the Cellular Learning Theory Model (1981)[6] the concept of cellular learning is a way to better understand the interrelationships and varied 'mixes' of learning strategies and instructional materials/devices which can be used to enhance the development of student attitudes, awareness, critical thinking, decision-making, and skills acquisition/application.

Education as 'preparation for life' will take on a more global perspective in content and presentation, and audiovisual materials will play an ever increasing role in the development of global awareness concepts on the part of students.

Within the realm of global education one area of competency development is the ability of the student to communicate an idea or factual data to others. How can this be done in order to accommodate the diverse abilities of students found in a given classroom?

As depicted by cellular learning theory variables, the 'core' of communication skills development is the student/teacher interaction (Primary Learning) cell. It is surrounded by several Secondary Learning Cells with which the student(s) and teacher interact -- in order to achieve the stated goal: the communication of ideas and/or

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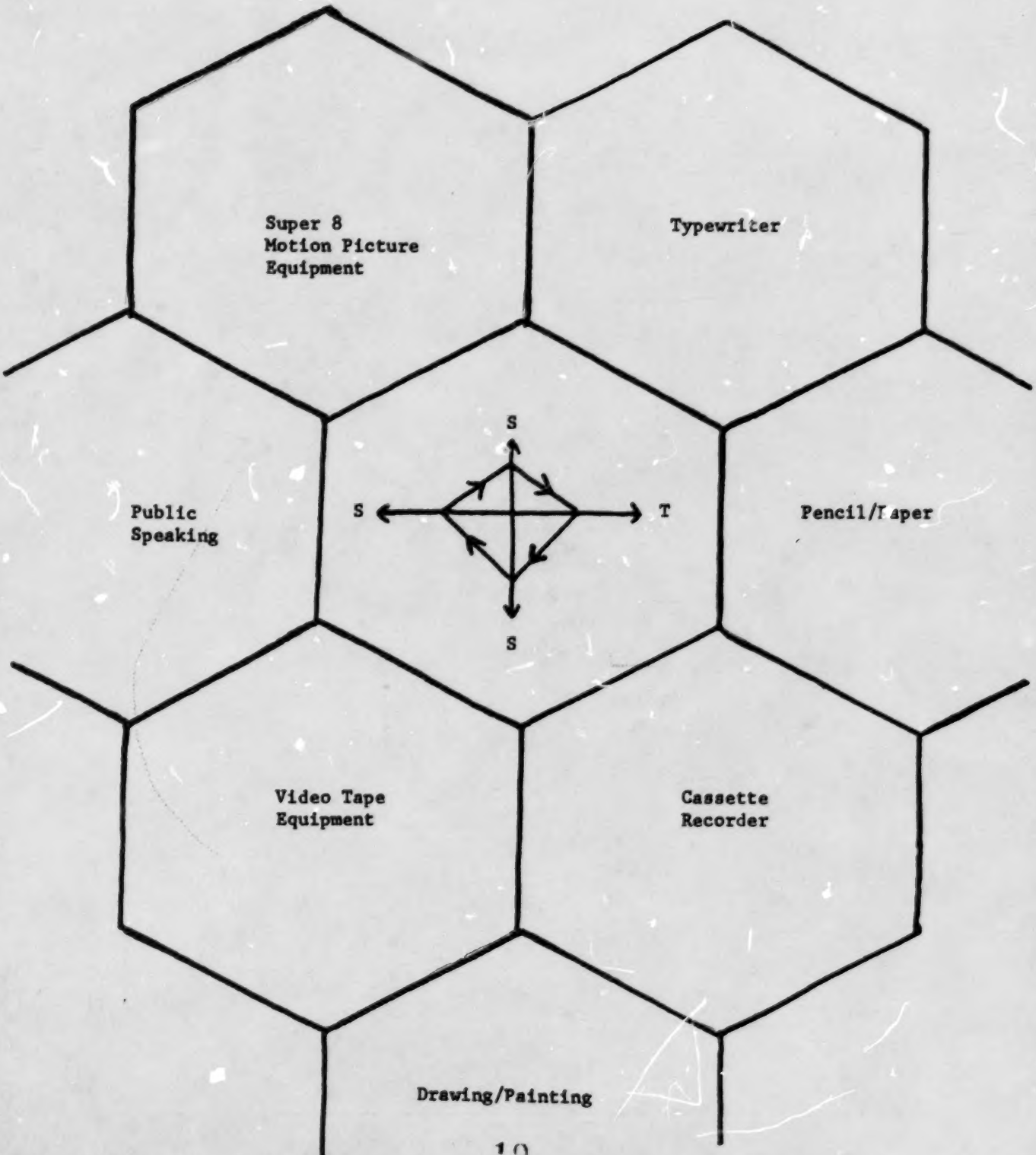
6 Application of the Cellular Learning Theory Model to the Professional Education of Preservice Teacher Trainees and the Inservice Training of Classroom Teachers and Supervisors. Resources In Education (ERIC) (August 1981) ED 200 533

factual data.



In order for students and teachers to know what options for learning are available to them (in order to achieve stated goals) for a given situation, they must be familiar with the character and function of several Secondary Learning Cell hardware/software items, e.g., cassette recorders, drawing/painting materials, motion picture and video tape equipment.

The Cellular Learning Theory Model provides for (through the use of Secondary Learning Cells) diverse student abilities and interests. Some students may be interested in/skilled in working with graphic media devices while others prefer to use different methods/materials to communicate, e.g., speeches, written reports.

SOME 'HOW TOs'

In the realm of K - 12 instructional programs there are several different learning activities/strategies which can be employed for purposes of affecting student attitudes, awareness, and critical thinking regarding the world about them.

AREA OF STUDY: Conservation

CONCEPT: Man: An Endangered Species

PURPOSE: To acquaint students with the fact that mineral resources are finite.

SUBJECTS: Language Arts, Science, and Social Studies

GRADE RANGE: 1 - 12

ACTIVITIES:

1) What are some of Man's basic needs and their effects on natural environments?

2) Historically, how have humans used mineral resources?

3) What are some of the ways minerals can be conserved?

4) What are some of the mineral resources found in given regions of the state, nation, and/or selected foreign countries?

EVALUATION: 1) Reports (oral and written)

2) Discussions

3) Classwork (individually and in small groups)

4) Quizzes and tests

AREA OF STUDY: Oceanography

CONCEPT: The World's Oceans and Seas

PURPOSE: To acquaint students with the distribution of land and water on the Earth's surface.

SUBJECT(S): Language Arts, Science, and Social Studies

GRADE RANGE: 5 - 12

ACTIVITIES: 1) Using globes and maps, students locate the world's oceans and seas and determine their geographical position(s) in relationship to selected countries.

2) Students list three major nations to be found in the region of each ocean or sea.

3) Group activities related to how humans have used and benefited from each ocean or sea throughout recorded history.

4) Reports on how humans have depended upon selected oceans or seas for their survival and economic growth.

EVALUATION: 1) Classroom activities

2) Reports (oral and written)

3) Discussions

4) Quizzes and tests

AREA OF STUDY: Environmental Awareness

CONCEPT: Pollution Effects

PURPOSE: To acquaint students with the fact that various types of pollution can be harmful to humans and nature.

SUBJECT(S): Language Arts, Science, and Social Studies

GRADE RANGE: 5 - 12

ACTIVITIES:

1) Students select types of pollution and develop reports (e.g., air, water, noise).

2) Tours of selected areas to identify and investigate various types of pollution.

3) Students make audiovisual reports of their community studies.

4) Students role play a government meeting in which pollution is discussed. How can it be prevented? What can be done to stop it?

5) Students read books on the topic.

6) Students make a bulletin board display related to pollution: causes and effects.

7) Tour of a water treatment plant, a recycling center, a landfill, etc.

EVALUATION:

1) Reports (oral or written)

2) Discussions

3) Audiovisual productions

4) Bulletin board displays

5) Quizzes and tests

AREA OF STUDY: Environmental Awareness

CONCEPT: Land Use Planning

PURPOSE: To acquaint students with Man's use of land, his efforts to manage the land, and why land use planning is necessary.

SUBJECT(S): Language Arts, Mathematics, Science, and Social Studies

GRADE RANGE: 7 - 12

ACTIVITIES:

1) Land is a finite resource and its worth as well as use must be managed. Students identify several different uses of the land within the confines of a stated geographical region. Tours of the given area, aerial photographs, and maps enable students to identify various land uses; roads, house lots, pasture land, forest lands, recreational areas, shopping centers, etc.

2) Land use planning is a decision (or a series of decisions) regarding the best use of the land. The decision(s) is (are) based on factors such as:

   . physical makeup of the land
   . local resources
   . community needs
   . slope of the land
   . PH factor of the soil
   . soil structure and composition
   . drainage
   . vegetation
   . basis for the local economy

3) Students select a plot of land and survey its characteristics.

4) Students role play a government meeting where the use of the survey plot of land is debated.

EVALUATION:

1) Field work

2) Reports

3) Role playing activities

4) Discussions

5) Quizzes and tests

REMARKS

Earth is sealed off from space much as a spaceship is. Earth's land, water, and air are locked together by gravity. All the fresh water, air, mineral, plant, and animal resources Earth now has it has always had. Earth gets no new supplies from space. Earth is a closed system.[7]

Because of humans' environmentally-destructive activities, hundreds of plant and animal species are threatened by extinction and we are slowly poisoning ourselves.

Growing numbers of people are hindering government efforts to alleviate poverty and to provide public services. In developing countries, population growth has especially affected the poor majority by increasing competition for limited food supplies, jobs, and land.

Two-thirds of the world's food supplies are consumed by the developed countries, comprising only one-third of the world's population. About 500 million people in the world are severely malnourished. About half of the world's population has an inadequate diet.

The oceans of the world are being overfished and polluted. Overfishing has depleted the stocks of many fish species, and contamination by petroleum, pesticides, and heavy metals has disrupted oceanic food chains and made some fish catches unsafe for human consumption.

Ecology is what everybody must start to think about if we are to avoid irreversible changes within the closed system of Earth.

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7 Earth Trek.., Explore Your Environment. United States Environmental Protection Agency, Washington, DC (October 1977) pp. 4.

Everything around us is tied together in a system of mutual interdependence. Humans as a part of nature cannot master it. They must learn to work with it -- and with each other everywhere -- to guarantee that we do not alter the environment so drastically that we perish before we can adjust to it.

Ensuring our future on Earth is the task before global education. Using the social studies disciplines of knowledge as 'vehicles' for study and learning, global education has as its main charge the development of global awareness and perspectives among today's youths -- tomorrow's leaders and decision makers.

APPENDICES

APPENDIX I

Selected Print Materials

Articles

Gratz, Pauline, "The Environment and the Teacher," Social Education, January 1971, pp. 58 - 62 and p. 73.

Griffith, Gail, "Environmental Studies: A Curriculum for People," Science and Children, January-February 1972, p. 21.

Horsley, Kathryn, "Sources and Resources: Population Education," Social Education, April 1972, pp. 403 - 417.

Linsky, R. B., "Educational Strategies for an Environmental Ethic," Science Teacher, January 1971, pp. 16 - 18.

Margolin, Edythe, "Ecology in the Primary Grades," Social Education, January 1971, pp. 63 - 66.

Sale, Larry L., "Environmental Education in the Elementary School," North Carolina Education, October 1970, pp. 12 - 13 and pp. 30 - 31.

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Utton, Albert, and Henning, D., Interdisciplinary Environmental Approaches. Environmental Media Press, Costa Mesa, California, 1974.

Watt, Kenneth E. F., Ecology and Resource Management. McGraw-Hill, New York, New York, 1968.

APPENDIX II

Selected Audiovisuals

Films

Face of the Earth. King Screen Productions, Chicago, Illinois.

Inherit the Earth. Bay Area Educational Television Association, San Francisco, California.

Man and His Resources. McGraw-Hill Films, Boston, Massachusetts.

Our Crowded Environment. Encyclopaedia Britannica Educational Corporation, Chicago, Illinois.

Filmstrips

An Introduction to Ecology: Six Basic Systems. Eyegate House, Inc., Jamaica, New York.

Concepts in Ecology. Centron Educational Films, Lawrence, Kansas.

Discovering Life Around Us. Encyclopaedia Britannica Educational Corporation, Chicago, Illinois.

Ecology: Exploration and Discovery . United Learning, Niles, Illinois.

Environmental Studies. Centron Educational Films, Lawrence, Kansas.

APPENDIX III

Selected Organizations

Center for World Studies, Eisenhower College of Rochester Institute of Technology, Seneca Falls, New York 13148

Ecology Action Education Institute, Box 3895, Modesto, California 95352

Friends of the Earth, 30 East 42nd Street, New York, New York 10017

Independent Bureau for International Development Issues, Institute of Social Studies, 251 Badhuisweg, The Hague, Netherlands

Institute for Environmental Education, 2785 Som Center Road, Chagrin Falls, Ohio 44022

Lisle Center for Intercultural Studies, Rockland Community College, Suffern, New York 10901

Planned Parenthood and World Population, 810 Seventh Avenue, New York, New York 10019

Resources for the Future, Inc., 1755 Massachusetts Avenue, NW, Washington, DC 20036

The Population Reference Bureau, Inc., 1337 Connecticut Avenue, NW, Washington, DC 20036

The René Dubos Center for Human Environment, 200 49th Street, Bronx, New York 10471

World Future Society, 4916 St. Elmo Avenue, Washington, DC 20014

Worldwatch Institute, 1776 Massachusetts Avenue, NW, Washington, DC 20036

APPENDIX IV

Selected Vocabulary

adaptation - the process of accommodation to change; the process by which the characteristics of an organism become suited to the environment in which the organism lives.

birth rate - the number of individuals born during some time period, usually a year, divided by the mid-year population of that year.

carrying capacity - the maximum number of individuals of a given species that can be supported by a particular environment.

competition - an interaction in which two or more organisms try to gain control of a limited resource.

death rate - the number of individuals dying during some period of time, usually a year, divided by the mid-year population of that year.

demographic transition - the pattern of change in birth and death rates typical of a developing society.

ecology - the study of the interrelationships among plants and animals and the interactions between living organisms and their physical environment.

ecosystem - a group of plants and animals occurring together plus that part of the physical environment with which they interact.

environmental degradation - any action that makes the environment less fit for plant or animal life.

Green Revolution - the realization of increased crop yields in many areas of the world due to the development of new high-yielding strains of wheat, rice, and other grains in the 1960's.

land use - issues associated with how a particular area of land will be/ is being used.

mineral reserves - the estimated supply of ore in the ground.

natural succession - the sequence of changes through which an ecosystem passes during the course of time.

pollution - the contamination of the quality of some portion of the environment by the addition of harmful impurities.

species - a group of organisms that interbreed with other members of the group but not with individuals outside the group.

system - an assemblage of objects united by some form of regular interaction or interdependence.

urbanization - a process characterized by movement of people from rural to urban settlements.

zero population growth - a condition where the birth and death rates in a population are equal. The size of the population remains constant.